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SCIENCE NEWS LETTER

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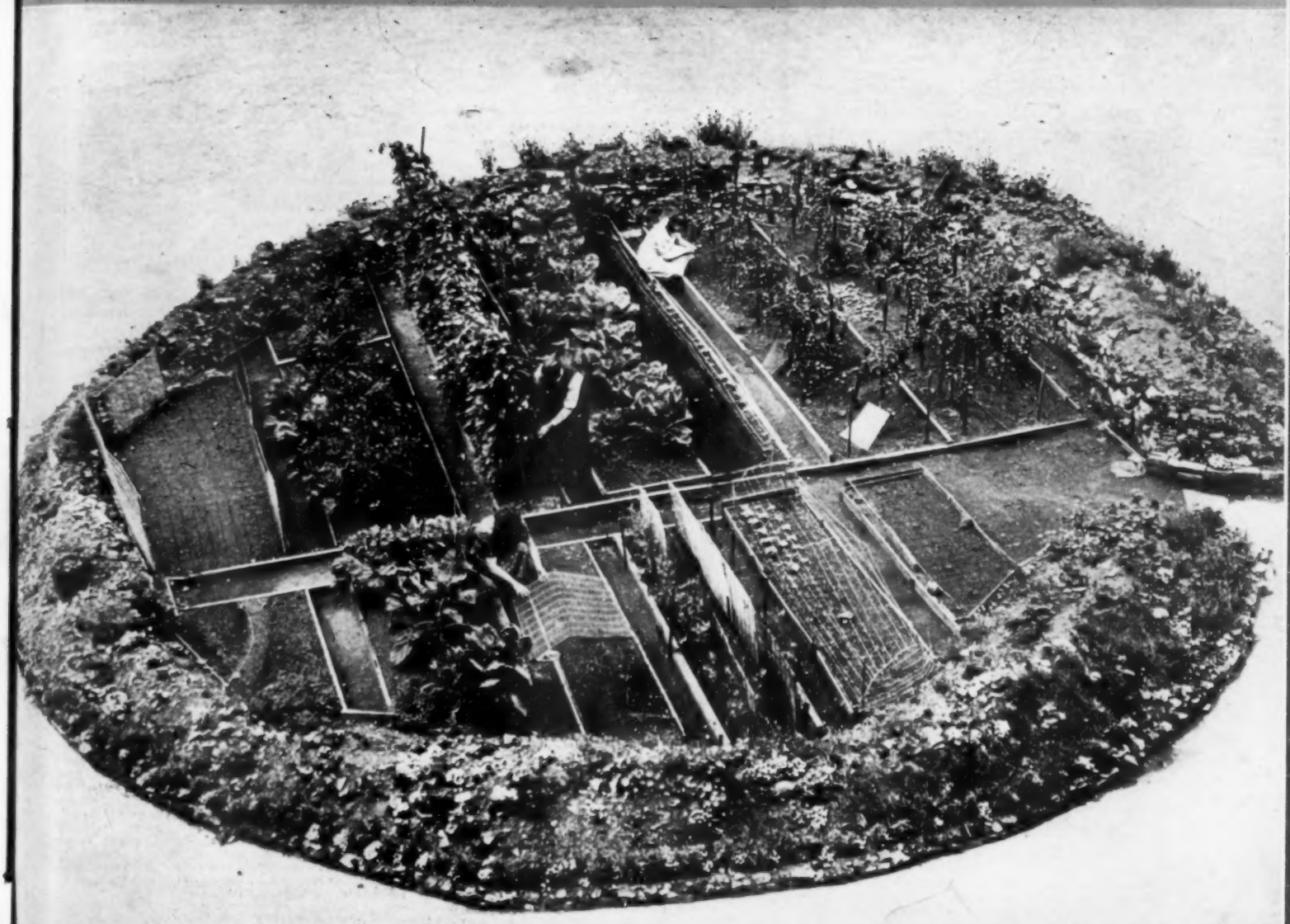
THE WEEKLY SUMMARY OF CURRENT SCIENCE • MAY 1, 1943



The Better 'Ole

See Page 281

A SCIENCE SERVICE PUBLICATION

Do You Know?

During the summer the *black widow* spider constructs approximately six silken egg sacs, each containing about 300 eggs.

The United States, formerly the world's largest potash-importing country, is now a *potash* producer and exporter.

Some 5,224 people have been killed in approximately 2,800 *tornadoes* during the past twenty years, and the property loss exceeded $230,000,000.

Soil for a window box can be *sterilized* by putting it in the kitchen oven with a potato buried in it; when the potato is thoroughly baked the sterilization is complete.

A grain of *rice* with the husk removed consists of three layers: the outer has most of the mineral constituents; the middle layer, albumen and fat; and an inner portion packed with starch granules.

Eight distilleries are expected to be in operation in Brazil next year producing annually over 4,000,000 gallons of motor *alcohol* from mandioca, better known here as cassava, the source of tapioca.

Bees are helping in the war effort: they increase the production of fruit and many forage crops by pollinizing flowers; produce honey to help in the sugar shortage, and beeswax to coat shells and airplanes.

Irrigation is necessary for the growing of *coffee* where the annual rainfall is below 30 inches annually.

Eighteen years of *excavations* on more than 40 sites in New York State constitute the basis of a forthcoming book on pre-Iroquoian cultures.

U. S. Bureau of Mines crews are fighting Alaska's bad weather and rough country to locate *minerals* that will yield metals for fighting equipment.

Hydroelectric plants put into operation in Canada in 1942 have a total capacity of 378,600 horsepower.

The New Zealand *butter* production for the year ended July 31, 1942, was approximately 103,000 tons, a decrease of 25% from the preceding year.

The U. S. Public Health Service has made more than 160,000 X-ray examinations of workers in war industries for *tuberculosis* since the war began.

Question Box

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Most articles which appear in SCIENCE NEWS LETTER *are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.*

SCIENCE NEWS LETTER

Vol. 43 MAY 1, 1943 *No. 18*

The Weekly Summary of Current Science, published every Saturday by SCIENCE SERVICE, Inc., 1719 N St., N. W., Washington, D. C. NOrth 2255. Edited by WATSON DAVIS.

Subscriptions—$5.00 a year; two years, $7.00; 15 cents a copy. Ten or more copies to same address, 5 cents a copy. Back numbers more than six months old, 25 cents.

In requesting change of address, please give your old address as well as the new one, at least two weeks before change is to become effective.

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Cable address: Scienserve, Washington.

New York office: 310 Fifth Avenue, CHickering 4-4565.

Entered as second class matter at the postoffice at Washington, D. C., under the Act of March 3, 1879. Established in mimeographed form March 18, 1922. Title registered as trademark, U. S. and Canadian Patent Offices. Indexed in Readers' Guide to Periodical Literature, Abridged Guide, and in the Engineering Index.

The Science Observer, established by the American Institute of the City of New York, is now included in the SCIENCE NEWS LETTER.

The New York Museum of Science and Industry has elected SCIENCE NEWS LETTER as its official publication to be received by its members.

Member Audit Bureau of Circulation. Advertising Representatives: Howland and Howland, Inc., 393 7th Ave., N. Y. C., PEnnsylvania 6-5566; and 360 N. Michigan Ave., Chicago, STAte 4439.

SCIENCE SERVICE is the Institution for the Popularization of Science organized 1921 as a non-profit corporation.

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GEOPHYSICS

Robots To Study Ocean

Current surveys for the Navy will be made by floating boat-like metal buoys with radio masts fifteen feet tall. Stay at posts during bad weather.

➤ OCEAN CURRENT surveys for the Navy will be made this spring on the Atlantic Coast by floating radio robots—boat-like metal buoys with radio masts fifteen feet high. A streamlined meter containing a compass will be suspended from each buoy to record the velocity and direction of the current. It automatically broadcasts this to the mother ship. At the receiving end, the radioed impulses of the meter are recorded by a robot mechanism in groups of three; the distance between two of the "ticks" giving the velocity and the location of the third between them giving the direction of the current.

Dr. L. O. Colbert of the U. S. Coast and Geodetic Survey told members of the American Geophysical Union meeting in Washington, D. C., that the new radio current meter decreases the number of vessels needed for such a survey as simultaneous observations can be made at several current stations. Another advantage is that the streamlined current buoys can remain at their posts during bad weather and in strong currents with less difficulty than a ship anchored under similar conditions.

Science News Letter, May 1, 1943

When a Snowbank Melts

➤ WHAT HAPPENS between the time a deposit of snow in high altitudes begins to melt and the time the water appears in creeks and rivers was reported on at the meeting of the Union by A. R. Croft and R. B. Marston of the U. S. Forest Service.

Only meager knowledge is available about the part played by snow in watershed recharge, snow melting rates and the factors that influence them, movements of melted snow water through the snow, and the overland flow beneath snow on bare soil surfaces.

These questions were studied on a 99-acre tract of land in the Wasatch Plateau in Central Utah. Underground flow was included as well.

Melting began the last of April. The melting rate from then on varied from none to nearly two inches a day until the first of June. Practically all water entered the soil and its vegetation cover. Water appeared 36 inches below the surface in 12 days and in 16 days was 36 to 72 inches below the surface. This water was available for summer crops.

When melting is rapid, water flows directly over the surface and very little gets into the soil to be of help to vegetation.

Science News Letter, May 1, 1943

Structure of a Shower

➤ HOW A SHOWER of rain is built, how much of it is absorbed by the soil as it falls, and how much runs off, were the topics of the paper by Leonard Schiff of the U. S. Soil Conservation Service.

The intensities of rainfalls and their order or pattern exert a marked influence on the infiltration or absorption rate, he said. Ground surfaces become sealed by the impact of rain, lessening the rate of infiltration. "Drop size usually increases with intensity, resulting in greater soil dispersion and reduced infiltration."

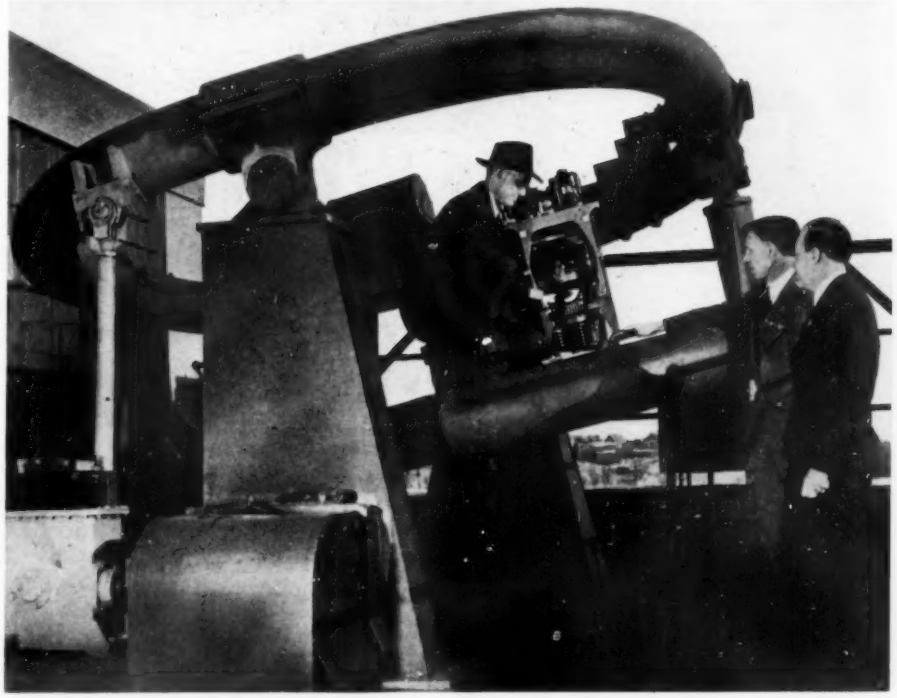
In studies of surface runoff and infiltration made by the speaker, storms were classified according to whether the rainfall was heavy or light, and also according to the order of occurrence of rainfall intensities. If high intensities occur early in the storm infiltration may be high and runoff low. Low intensities that occur at the outset for a considerable period cause the soil to approach its capacity and heavy rains following may result in considerable runoff.

Science News Letter, May 1, 1943

Bushes Help Soil

➤ WATER falling as rain or snow soaks down into the soil in larger percentage when there is a ground cover of mixed bushes and grass than when the cover consists of grass alone, Lowell Woodward of the U. S. Forest Service told his fellow-scientists. He reported on detailed quantitative studies of infiltration rates on various types of soil, under different kinds of vegetation, in a typical pastured forest area in Utah.

In general, the denser the plant cover



MOTION TEST—All the ups and downs of a warship ploughing through high seas have been built into this tester for naval equipment. General Electric engineers are interested observers as one of their colleagues risks seasickness in riding with the equipment under test.

the better the soil's intake of water. Worst conditions obtain when overgrazing or fire have laid the soil bare. That is when the surface particles pack together under the pounding of raindrops and form a tight crust, which rolls further precipitation off almost as well as a tile roof, piling into the creeks and rivers to gorge them into destructive floods.

Science News Letter, May 1, 1943

PUBLIC HEALTH

Guard Health of High School Children

➤ "GUARD the health of boys and girls of high school age who are combining school with part-time jobs, who are working during vacation, or who are entering full-time employment."

That is the main theme of the May Day—Child Health Day platform of the U. S. Children's Bureau for this year.

First step parents can take to follow this advice is to have son or daughter thoroughly examined by the family doctor before starting on the job. The doctor may find some unsuspected health defect which would make it most unwise for the child to take on the extra strain of even a part-time job. If the doctor gives an okay on the health score, he probably will also give some advice about the type of work, and hours which the particular boy or girl can safely follow.

The average boy or girl of this age needs 9 or 10 hours of sleep every night, the U. S. Children's Bureau states. Parents are going to have a tough job many times in enforcing this rule. Every effort should be made to see that these older boys and girls do not impair their health by skimping on sleep.

By the time a boy or girl is old enough to start working, he should know the rules of good diet and know them so well that he follows them automatically. Parents may, however, need to drop a few tactful reminders about the importance of milk, fruits and vegetables and whole grain bread and cereals. The meals eaten at home should be planned each day to make up for any deficiencies in the meal or meals eaten away from home.

Posture also needs watching. Sitting or standing continually in a bad posture, stooping over a work bench for many hours, may result in a curved spine. Boys and girls of this age should not continuously use one set of muscles over and over for many hours daily.

Science News Letter, May 1, 1943

PUBLIC HEALTH

Examination Urged

The more than 3,000,000 children employed during the coming summer should be checked up on carefully before work certificates are granted.

➤ A PHYSICAL examination of every boy or girl should be made before he or she is granted a work certificate, Miss Katharine F. Lenroot, chief of the U. S. Children's Bureau, declared at a press conference.

The "special measures" for the protection of working boys and girls of high school age called for in President Roosevelt's proclamation of May 1 as Child Health Day were explained at the conference.

Under the stimulus of war, more than 2,000,000 boys and girls between 14 and 18 years of age were employed as of October, 1942, the Children's Bureau estimates. More than 3,000,000 were employed during the 1942 summer vacation. An even larger number is expected to be at work this summer.

The physical examinations, Miss Lenroot explained, are needed to make sure that a child with defects of vision or hearing, with incipient hernia, or with unsuspected tuberculosis or heart disease, is not subjected to work which will further impair his health. Many such children should not work at all. Others might work in certain jobs under careful supervision.

Too long hours of work are another health hazard to boys and girls of high school age. The child labor laws of 42 states now have a maximum work week of 48 hours or less for workers up to 16 or 18 years in a varying range of occupations. No child under 18, the Children's Bureau maintains, should be permitted to work more than eight hours a day or 48 hours a week either on farms or on other jobs.

Part-time jobs after school should be limited so that the combined hours of school and work do not exceed this total, except that as school is likely to be different from a job and less strenuous, some boys and girls of 16 and 17 may be able to put in a total of 9 hours a day on school and job together.

Some jobs have basic health hazards, such as exposure to lead, carbon disulfide, chlorinated solvents and benzol, which Miss Lenroot pointed out, are more dangerous to boys and girls under 18 than to other workers.

Science News Letter, May 1, 1943

ENGINEERING

Walls of the Future

Homes may be built with walls of glass containing light-polarizing material in a sliding plate so that wall can be made opaque or transparent at will.

➤ HOMES of the future with sliding glass partitions that can be made transparent or opaque at will were envisioned by Dr. Alexander Silverman, head of the University of Pittsburgh chemistry department, in an address before the meeting of the American Ceramic Society in Pittsburgh.

By sandwiching light-polarizing material in glass, then crossing two plates in a double wall construction, an opaque partition will result. When one of the plates is slid back, the partition will become transparent, permitting light to stream in.

Colored plate glass walls with artistic continuous metallized decorations was another possibility cited by Dr. Silverman. Electricity passing through the decorations would heat the room. Glass floors could be metallized like the walls or glass foot-warmers designed as hassocks could be used. If additional heat were necessary portable stoves of artistic metallized glass might be designed.

"A room at sixty degrees, insuring warm feet and uniform radiation toward the body from all sides, would be more comfortable," declared Dr. Silverman, "than today's home at seventy degrees or higher."

Glass construction combined with

heating elements can also have built-in lights, thus producing attractive heating and illuminating effects. Tempered glass doors, either clear or opaque, may lead from one room to another and cover cabinets and closets.

Won't the home-owner be nearly blinded by the glare from this glittering glass interior? Dr. Silverman answered with a definite "no." By the recently developed treatment of sheet glass to produce thin etched films only about a molecule thick, almost all reflected light glare can be eliminated.

Although glass plates can be used for both interior and exterior construction, glass brick and hollow tile are likely to have increased use also.

"The blocks will be produced in various colors," Dr. Silverman predicted, "opaque, translucent, transparent."

Artistic design will evolve from the more utilitarian approach now used in modern factory construction.

Glass wool will be much more widely used for insulation. It is constantly being made lighter and is now available in a form weighing only a half-pound per cubic foot. A four-inch layer of glass wool has the heat insulating value of a fourteen-foot concrete wall, it is claimed.

"In the temporary housing provided for our Armed Forces in the Arctic regions, porous glass materials, especially wool, are employed to keep out the intense cold," Dr. Silverman pointed out.

Glass fabrics will also find increasing use in motor generators, in cables, and as battery insulators.

Science News Letter, May 1, 1943

PHYSIOLOGY—ENTOMOLOGY

Quick Change Explained

Speed of color shifts in chameleon or eel is determined by skin's pigment-containing cells, not by nerve impulses or gland secretions.

➤ WHEN a chameleon flashes from brown to green in a few seconds, or an eel more sluggishly takes several hours to shift from dark to pallid in skin hue, don't seek the cause for this difference in rates in the nerves of the one animal or the gland secretions of the other, Prof. G. H. Parker, Harvard University zoologist, told the American Philosophical Society at its meeting in Philadelphia.

Quickness of color change in some animals, slowness in others is determined primarily by the skin's pigment-containing cells themselves, he declared. This is contrary to the zoological doctrine most widely held at present, which states that the quick-changing animals do the trick by means of nerve impulses, while the ones that alter their colors slowly depend on hormones or gland secretions.

This opinion, Dr. Parker said, was based on the examination of only a few animals, and falls down when a score or more species, a wide range of color-changing speeds, are examined. As a matter of fact, the quick-changing chameleon depends on hormones, the slow-changing eel on nerves.

Slowness of response by color cells to either hormone or nerve stimulus has an analogy in a similar slowness in muscle cells, Prof. Parker pointed out; a snail's muscles simply cannot move otherwise than very deliberately, while a flea's muscles always contract with a lightning-like snap.

Science News Letter, May 1, 1943

Time Changes With Age

➤ THE CLASSIC joke, that married people live longer—or maybe it just seems that way, has a real scientific basis. Biologically speaking, time depends on the physiological and psychological state of the organism concerned, rather than on ruler-like measurements around the rim of a clock, Pierre Lecomte du Noüy, of the University of Paris, told the meeting. Even a relatively simple biological process, like the formation of a scar or wound, goes faster in a young person or animal than in an old one; and there is a definite mathematical formula for expressing the rate of change as age advances.

Science News Letter, May 1, 1943

Clover Pest Hurts Potato

➤ HOW AN insect pest that normally infests one crop, clover, becomes a carrier of a serious virus disease to another crop, potatoes, on which it ordinarily does not feed, was related by Dr. L. M. Black of the Rockefeller Institute for Medical Research at Princeton, N. J.

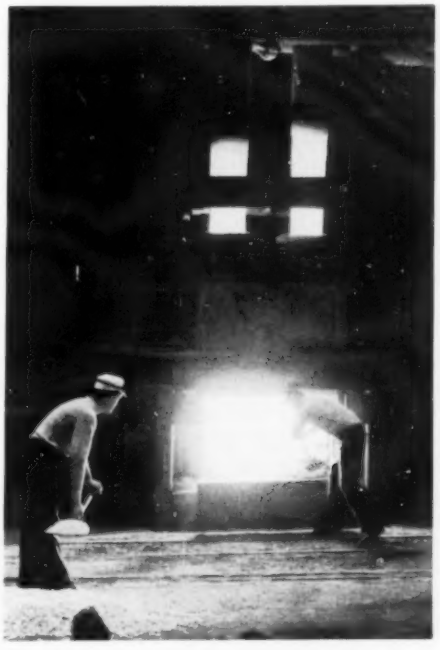
Dr. Black summed up the situation:

"The potato yellow-dwarf disease sometimes causes serious losses to potato growers in the northeastern states of the Union. Potato yellow-dwarf is caused by a virus which is introduced into the plant by an insect. None of the common insects on potatoes are able to infect them with the virus, but an insect very common in clover fields and pastures transmits the virus efficiently.

"This insect is the clover leafhopper, which under certain conditions occurs in potato fields in large numbers. It plays an important part in the life history of the virus because, once the leafhopper picks up the virus, it retains it for a long time and is able to infect many plants.

"Suppose that a clover leafhopper feeds on a diseased ox-eye daisy, the common reservoir of the virus. The insect will be unable to infect any plants for the following week, but after that it may infect plants as long as it lives. It may even keep virus in its body through the winter and infect plants the next spring."

Science News Letter, May 1, 1943



STEEL FOR WAR—Shoveling dolomite into the furnace at a United States Steel Corporation plant preparatory to charging scrap for another heat of high-grade alloy steel. With each charge, 70 tons of alloy steel are produced.

GENERAL SCIENCE

Science from Shipboard

Informative handbook for those who cross the seas in ships to fight for freedom published; scientists tell of stars, weather, birds, ships and many other things.

The new book, SCIENCE FROM SHIPBOARD, *was introduced to the public through this radio talk by Dr. Harlow Shapley, director of Harvard College Observatory, in the Adventures in Science program over the Columbia Broadcasting System:*

➤ WE HAVE all become accustomed to the phrase "This is a scientific war." We hear continually that a large proportion of our chemists, physicists, and engineers are at work on the important machinery of war. We hear that a great many of our soldiers and sailors must be trained in the elements and in the specialties of physics—training, which for various reasons our secondary schools have failed to provide during the past twenty years.

But most of you do not know that the scientist has been appealed to also for assistance in maintaining the morale of our armed forces. Probably you did not know that this morale can be helped through popular instruction in various branches of science.

But if, for example, you had the prospect yourself of a two months' trip by army transport, with all its possibilities of dullness and monotony, you and your morale would better appreciate both the ailment of ennui and the cure thereof.

This is how it all began. A representative of the American Red Cross, which is busy with many hard war problems, asked me if I could provide some charts showing the positions and names and habits of the bright southern stars—the stars such as one might see on a clear night from Guadalcanal. Of course I could, and naturally I would be glad to provide information about them. For fifty years the Harvard Observatory has maintained many telescopes and observers in the Southern Hemisphere for the purpose of studying these bright stars, as well as the several billions of fainter ones that the naked eye knows nothing about.

But why prepare only star charts for the curious traveler? Why not prepare charts and descriptions of clouds also, and of whales and waves and sea birds? Why not prepare a simple scientific guide to all sorts of things that could be seen over the transport's rail?

"Very well," said the Red Cross, "go to it, and we shall see to the distribution of thousands of such booklets, if they are any good; we shall distribute them to the men and libraries on the transports."

Promptly we laid out a plan. I appealed to my colleagues at the Harvard Observatory. Six of them undertook jobs of writing on subjects concerning which they are experts. Two or three others pitched in to help with drawings and editing. But since it is not enough to deal with stars, the Milky Way, planets, and timepieces, we went to the Boston-Cambridge branch of the American Association of Scientific Workers—an organization that includes in its programs the presentation to the scientifically interested public of scientific knowledge in non-technical language.

Everywhere we met prompt and friendly cooperation. The expert scientists, to whom we turned, were glad to help the Red Cross, glad to help the soldiers on the transports, glad to help the men in camps who later might go to sea, and those who stay at home but are interested nevertheless in the interests of those who do go out in ships.

With the help of biologists, a navigator, two ship engineers, a geographer, a weather expert, an ornithologist (that means birds), and a group of artists who could make explanatory drawings and pictures, the book "Science from Shipboard" was produced. It has just been published—two hundred and sixty-eight pages of reading and pictures that should make a trip by sea an interesting adventure. The casual reader is almost certain to turn upon something of much interest; the persistent reader will come away from the book with a pretty fair elementary education in general science.

The American Red Cross has certainly done another fine service by inspiring the making of this little book and by distributing it without cost to the sailors and soldiers on transports.

Let's quickly look at some of the contents of Science from Shipboard.

Waves and wind and water are all around the boat, and it turns out that they are full of interest and information when followed with the help of a full-size essay by Dr. Brooks, the director

FOR WAR INDUSTRY—Boys of 16 are being trained in an apprentice course at Westinghouse Lamp Division to relieve the manpower shortage in war industries. This youth is being instructed by a veteran foreman in lathe operation.

FOR LABORATORY WORK—A special course has been developed at Brown University to train girls swiftly to become laboratory technicians. These girls are learning how a burette works.

of the Blue Hill Meteorological Observatory.

Three chapters deal with the stars. The southern stars are charted as well as the northern. Special maps were made for this particular volume. The answers to all the ordinary astronomical questions of the traveler by sea are here available, as well as a story on the reckoning of time by hours, days, and years.

For the articles describing the technique of navigation, we have had the expert services of one of the instructors in the United States Naval Academy; and for the story about the islands of the ocean and the variety of shorelines, a well illustrated account has been prepared by Dr. Mather of Harvard.

There are two chapters on the life of the sea that can be seen from shipboard, one dealing with fish and things of that sort, and the other with the oceanic birds.

Two engineers have joined in preparing an account of the modern ship. They talk about Diesel engines, the steam power plant of a ship, the problem of stability, and even the simple problem of why a ship of sinkable materials does not sink.

The book finishes off with the most important part of the ship—the passenger himself. His seasickness is sympathetically treated; also the problems of vitamins and malaria and infection and anxiety. And there is useful comment on exposure and thirst—all written by Dr. Gerard of Chicago University, an expert in the popular presentation of such human problems.

Did you know that there are fifty kinds of seagulls? Well, there are, but only three of them get far enough from the shore to merit description in this book. And do you know what a noddy is, and a puffin? They also are sea birds, and so is the skua and the phalarop. Curiously enough, the scientists lack a great deal of full knowledge about sea birds, and some keen-eyed soldier or sailor is going to pick up some information new to science, if he keeps notes on his observations. His observation may have something to do with albatrosses, or the phosphorescence of sea water, or the behavior of clouds around some island mountain peak, or the appearance of a comet or nova among fixed stars.

It was from a small ship sailing the many seas a century ago that Charles Darwin made the observations and interpretations which a little later revolutionized man's way of thinking about nature and himself. Let's hope that the soldiers and sailors can also travel in humble fashion some of the heroic paths laid out by Darwin, and improved by a hundred years of scientific exploration; and that they can be intelligently guided in their observations and interpretations by "Science from Shipboard."

In addition to the edition for the American Red Cross, the book, "Science from Shipboard," has been published by Science Service at a not-for-profit price of only 25 cents. If you want a copy of this 268 page illustrated book, send a quarter to Science News Letter, 1719 N St., N. W., Washington, D. C.

Science News Letter, May 1, 1943

GEOLOGY

Japan's Pacific Gibraltar Is a Sinking Island

➤ TRUK, Japan's mid-Pacific Gibraltar, is a doomed island. Unless geologic processes now going on in the earth's crust beneath that part of the ocean are stopped or reversed, it will eventually be drowned. The only trouble is that this won't happen in 1943 or 1944—geologic processes are slow.

That Truk is sinking, while other islands that are now enemy strongholds are slowly rising, was revealed in an address by Prof. William Herbert Hobbs of the University of Michigan before the meeting of the American Philosophical Society in Philadelphia. Prof. Hobbs is one of the few Americans who have seen Truk and the other Japanese-mandated islands since they passed under the Rising Sun flag. He visited there in 1921.

For geologists interested in the story of mountain-building, most unique opportunities for study are offered by the several curving island chains in the Pacific, from the Bonins through the Philippines and Indies and far on to the South Pacific archipelagoes and New Zealand, Dr. Hobbs pointed out. Elsewhere on the earth, whenever a mountain chain has started to grow, it has immediately been attacked by erosion, which cuts it down even as it rises above the general crustal level. These arc-like strings of islands, however, are only the tips of mountain chains now forming as vast upthrust wrinkles from the ocean floor. Erosion therefore plays no part on their long, submerged flanks.

Only on the emersed tips which are the islands have the waves and the weather any chance to do any carving; and this is even a help rather than a hindrance to the geologist. For when an earthquake cycle has boosted the island out of the water another few feet, the waves obligingly carve a notch all around its shores, marking the new level. And if it should sink again, a coral reef forms, indicating the amount of submergence.

Science News Letter, May 1 1943

ASTRONOMY

Unusual Gas Discovered In Head Of Comet

➤ OBSERVATIONS on the star-like nucleus of Comet Whipple 2, which was recently visible near the Big Dipper, has led to the discovery of a gaseous compound hitherto unidentified in comets. It is the fragmentary molecule NH_2 produced when hydrogen or methane burns in the flame with nitrous oxide. Although luminous bands of NH_2 have been previously observed in the spectra of other comets, it was their extraordinary strength in Comet Whipple 2 that led to their identification. The observations were made by Dr. R. Minkowski with the 60-inch reflecting telescope of the Mt. Wilson Observatory.

The only other bands in the comet's spectrum besides those of NH_2 that could be identified with certainty were those of the carbon molecule, C_2, which were first described by Swan in the spectrum of the candle flame in 1857. The carbon bands, however, have long been known in comets.

Many other bands in Comet Whipple 2 were observed which could not be identified with known gaseous compounds, which serves to emphasize the peculiar conditions that must prevail in the nuclei of comets.

Science News Letter, May 1, 1943

BOTANY

Mechanism By Which Auxins Stimulate Growth Found

➤ DISCOVERY of the fundamental mechanism by which the hormone-like substances called auxins induce roots to grow on plant cuttings, affect the growth of the whole plant and produce parthenocarpy is announced by Prof. H. C. Eyster, of the University of South Dakota. (*Science,* April 16.)

"The mechanism," he states, "is fundamentally the release of diastase, and possibly sucrase and other enzymes, from the protein colloidal substances to which they are normally attached."

Diastase, familiar to many a dyspepsia sufferer, is one of the enzymes that act on starches, aiding in their digestion. When these enzymes are bound by adsorption onto a protein colloid, they are partly and considerably inactivated. When they are released by auxins or other substances, they can play a more active part in aiding digestion in the plant cells and thus stimulate plant growth.

"Daylight with its ultraviolet and blue-indigo-violet light components is very potent in accelerating the rapidity with which enzymes are bound to a colloidal carrier, consequently making the enzymes less free to act," Dr. Eyster explains. "Artificial light has very little influence, as expressed also in its reaction on growth of plants. Since there was more rapid digestion by the charcoal-bound diastase in the dark than in the light, this explains the greater growth of the stem tip on the shaded side than on the illuminated side.

"Growth substances merely aid in releasing the enzyme from the colloid, especially after it has been rather securely adsorbed by the influence of many continuous hours of strong natural illumination. This explains why growth substances are not specific, but include a great variety of substances from the indole compounds to ethylene and carbon monoxide. Any substance which releases the digestive enzyme from its colloidal carrier, or slows the rate at which the enzymes are being bound to the colloid, without unduly upsetting any vital process, can apparently act as a growth substance.

"Light is effective in building up food reserves for the plant, and in causing the digestive enzymes to be bound to their colloidal carriers more securely. Auxin releases the enzyme from its colloidal base and makes it free to act."

Science News Letter, May 1, 1943

DENTISTRY

Dental Priorities Proposed For High School Students

➤ NO LOST TIME between the call to the service and the beginning of actual training because of needed dental work would be necessary if plans proposed to the American Dental Association were put into effect.

Dental priorities for high school students is the proposal. Dentists throughout the country were urged to give preference over all other patients to high school boys and girls about to enter the armed services or to be employed in war industries.

"Never before has such a chance for achievement been presented to our profession," Dr. E. W. Morris, chairman of the association's Council on Dental Health, has reported.

The plan contemplates the use of 500 newly organized councils on dental health throughout the nation.

Science News Letter, May 1, 1943

IN SCIENCE

ASTRONOMY

New Comet Discovered By Finnish Woman

➤ A NEW COMET has been discovered by Miss L. Oterma, Finnish woman astronomer of Turku Observatory, who is credited with discovering two comets last year.

The comet was first seen on April 8 in the constellation of Virgo, which is now easily visible in our evening sky. It is of the fifteenth magnitude and therefore far too faint to be seen without telescopic aid. The new comet is near the celestial equator and moving west.

Harvard Observatory, American clearing house for astronomical reports, received word of the discovery by way of Denmark and Sweden. On April 8 at five p.m. EWT, the comet's right ascension was 12 hours, 19 minutes, and its declination plus 1 degree, 12 minutes.

Science News Letter, May 1, 1943

ENTOMOLOGY

Cattle Lice Annihilated By Phenothiazine

➤ COMPLETE annihilation of both short and long nosed cattle lice results from applying the synthetic drug phenothiazine on infested animals, research results (*Science,* April 16) show.

A 100% mortality rate of the sucking insects resulted from trials conducted on a dozen animals by H. S. Telford, J. H. Longwell and Prof. J. A. Munro of the North Dakota Agricultural Experiment Station. The drug was applied as a dust mixed with an equal quantity of flour.

Chewing lice, another type of cattle pest, also stopped feeding and were found scattered through the hair of the cattle. But hopes of a double-barreled action were dashed when the chewing lice were back on the job the next day.

Further experiments showed that both kinds of lice could be eliminated by adding two parts of sodium fluosilicate to the insecticidal mixture.

The new dusting powder may replace scarce imported insecticides, such as rotenone and pyrethrin.

Science News Letter, May 1, 1943

E FIELDS

GENERAL SCIENCE

Talent Search Winners Given Science Honor

➤ THE SIX Pennsylvania finalists in the Second Annual Science Talent Search for the Westinghouse Scholarships have been elected Honorary Student Members in the Pennsylvania Academy of Science.

This action was announced by Dr. Charles E. Mohr, president of the Pennsylvania Academy of Science. These six students were among the 40 boys and girls invited to Washington by Science Clubs of America as a result of a nation-wide competition in which some 15,000 of the top-ranking students in science in American high schools competed.

The students given Honorary Student Memberships together with the high schools they attend are:

Donald Rosswell Harris, Central High School, Johnstown, Pa.; Bernard Louis Strehler, Central High School, Johnstown, Pa.; Charles Poultney Perot, IV, J. P. McCaskey High School, Lancaster, Pa.; Wayne Ellsworth Boop, Matamoras High School, Matamoras, Pa.; Joseph Milton Fox, Overbrook High School, Philadelphia, Pa.; Leonard Charles Kurfuerst, North East Catholic High School, Philadelphia, Pa.

Science News Letter, May 1, 1943

PSYCHOLOGY

Birth Control Chemicals May Harm Intelligence of Young

➤ THAT SOME of the chemicals widely used in birth control may damage the minds of the baby later "accidentally" born is the warning of research reported (*Journal of Psychology*, April) by Drs. Johnette Dispensa and Richard T. Hornbeck, of Los Angeles City College.

Although their experiments were conducted on rats, they have many implications for humans, the scientists state.

Before mating, the female rats were treated with acid solutions in strengths widely used for contraceptive purposes. Other animals were given solutions of bicarbonate of soda instead of the acids. Baby rats born were later tested for their ability to learn to run a standard rat maze.

The acid solutions, it was found, resulted in rats with inferior maze-learning ability. Sodium bicarbonate in sufficient strength seemed to be beneficial. It was not suggested that the soda be substituted for the acids, however, because alkaline substitutes are less effective.

Since the sulfa drugs are now so commonly used in medicine, the scientists also tested the effect on the minds of the young when fathers were dosed with sulfanilamide during the breeding period. No damage was observed, but the investigators urge further study along this line.

The research on the effect of acid and alkali solutions on the intelligence of the offspring was a follow-up of earlier research by another scientist that seemed to indicate that use of acid favors birth of male young and alkali, female young.

Science News Letter, May 1, 1943

ASTRONOMY

Study of "Seven Sisters" Reveals Facts About Gases

➤ A STUDY of the little group of stars known as the Pleiades or Seven Sisters has revealed new facts about the nature of the obscuring clouds of interstellar gas throughout our galactic system.

The study was carried out by Dr. Walter S. Adams with the 100-inch reflector of the Mt. Wilson Observatory.

Nine stars of the Pleiades were selected for observation because their high temperature gave a background against which to detect the dark interstellar clouds.

Dr. Adams found that seven of the nine stars show obscuration by both ionized calcium and hydrocarbon gas; whereas two, Asterope and Merope, show obscuration by ionized hydrocarbon only.

This is the first case found in which lines of one interstellar gas occur without the presence of ionized calcium. Another interesting point is that neutral hydrocarbon which is prominent in many stars is completely missing from the Pleiades.

Dr. Adams concludes that, "The fact that such different interstellar lines are observed in neighboring stars of this small cluster indicates the diversity in the physical condition of the interstellar clouds and perhaps the limited dimensions which these clouds must have."

Science News Letter, May 1, 1943

RESOURCES

New Plastic Expected To Supplement Mica

➤ SYNTHETIC plastic material to supplement the available supply of mica necessary in war-used electrical equipment is promised in the near future. Priorities have been granted for the materials to construct a plant where the synthetic product will be made. The plant will be in production about July 1, it is now expected. The location is necessarily a military secret.

The material is a synthetic polymerized resin. It is reported to have high temperature resistance and low dielectric loss. These properties will permit its use in several types of radio equipment now requiring mica. It will be known under the trade name of Polectron.

This new plastic is a product of the General Aniline and Film Corporation. It has been tested for the corporation by the laboratories of the Massachusetts Institute of Technology and those of one of the large industrial companies making electrical apparatus. It has been tested also at Wright Field.

Much of the mica now in use is obtained from India and Brazil. It has been called by the War Production Board an urgently needed raw material vital to mechanized warfare, and mica users and fabricators were warned many months ago to conserve the supply in every way possible. One ton of the new plastic, fabricated into mica replacement material, will replace from 10 to 15 tons of the imported block mica, it is expected, thus saving much strategic material.

Science News Letter, May 1 1943

HORTICULTURE

Victory Garden Planted In London Bomb Crater

See Front Cover

➤ OLD BILL himself must surely have suggested the site for the novel round Victory Garden shown on the front cover. It is a big bomb crater, blasted through a paved area near Westminster Cathedral in London, and made to yield a high return in vitamins by the English couple seen at work in it. Acknowledgments are due to Herr Goering's brisk young men who pulverized the soil so nicely.

The official British photo of this "better 'ole" was made available in this country through OWI.

Science News Letter, May 1, 1943

ASTRONOMY

Summer Promise

Skies in May assume a distinctly springlike aspect. Venus and Jupiter brighten the western evening heavens. Astronomy's birth honored.

By JAMES STOKLEY

► BY THE TIME May arrives, the weather has usually become really springlike, and the evening skies, likewise, have assumed their distinctly vernal aspect. Only a few stragglers of the constellations of the winter evening remain on view in the northwest. A different group appears in the south, and a suggestion of summertime appears in the southeast as the scorpion, Scorpius, makes its first appearance. During the summer this figure is conspicuous in the south.

Though the wintertime constellations are rapidly vanishing from view, the presence in one of them still of two bright planets makes them more than usually conspicuous for this time of year. Look on the accompanying maps, which show the heavens as they appear at 11:00 p.m., wartime, on May 1 and at 10:00 p.m. on May 15. In the northwest is shown the constellation of Gemini, the twins. Considerably exceeding Castor and Pollux, the two brightest stars, are Venus and Jupiter. Venus is by far the brighter, of magnitude minus 3.6 in the astronomer's scale. This is about seven times more brilliant than Jupiter, which is minus 1.5.

Start With Dipper

To find the stars of the May evening, the big dipper, part of Ursa Major, the great bear, high in the north, is a good place to start. The dipper can easily be recognized, and in it are the pointers, which show the direction of Polaris, the pole star. But the handle of the dipper is also a guide. If you follow its curve around toward the south, the first bright star you come to is Arcturus, in Bootes, the bear driver. Following it still farther, you reach Spica, in Virgo, the virgin, which is in the center of the southern sky as shown.

Above and to the right of Virgo is Leo, the lion. In it, representing the animal's head, is the sickle. Bright Regulus stands at the end of the sickle's handle. On the other side of Virgo is the faint constellation of Libra, the scales, and next to Libra is Scorpius. Antares, the bright star of this group, is just coming above the horizon on the map.

Another first magnitude star is almost directly west—Procyon, in Canis Minor, the lesser dog. Farther to the right is Venus, and then Auriga, the charioteer, with Capella. In the northeast in Lyra, the lyre, is Vega, the brightest star now visible. And below Lyra is Cygnus, the swan, with Deneb, whose brilliance is somewhat dimmed because it is so low in the sky.

The only other planet which can be seen during the whole month is Mars. Standing in the constellation of Aquarius, the water carrier, it is low in the southeast at dawn. In the first day or two of May Mercury is visible low in the west as it is getting dark. Saturn is not visible at all—it is too close to the sun.

Astronomy's Birthday

Perhaps the most important astronomical event of May, 1943, is not in the sky. It is the commemoration of the beginning of modern astronomy, which took place exactly four centuries ago. On the 24th of May, 1543, a book which had just been published at Nuremberg was brought to its author, who lay dying at Frauenburg, in Poland, where he was canon of the cathedral. He had been born at Thorn, in Prussian Poland, on February 19, 1473, and had been christened as Mikolaj Kopernik, though we now know him by the Latinized name of Nicolaus Copernicus.

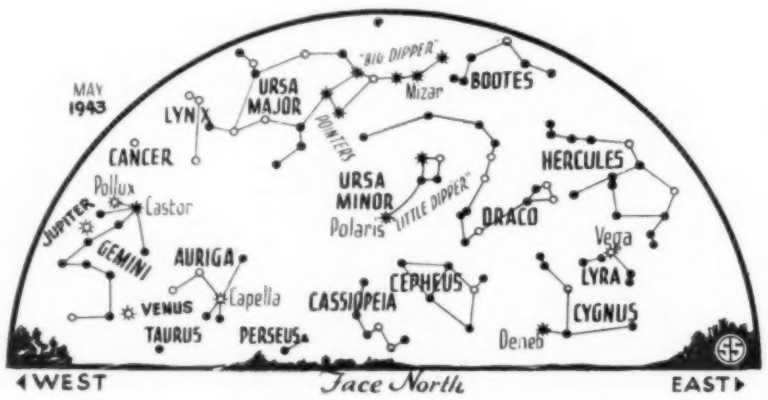
The idea of a spherical earth goes back to the ancient Greeks. Pythagoras and his followers accepted it about 500 B.C. About 420 B.C. another member of his school, Philolaus, taught that the daily revolution of this ball makes the skies seem to turn, producing the apparent rising and setting of the sun. And about 265 B.C. another Greek, Aristarchus of Samos, suggested that people were mistaken in thinking that the sun and planets revolved around the earth. Instead, he proposed, the sun marks the center of the system, and the earth revolves around it with the other planets.

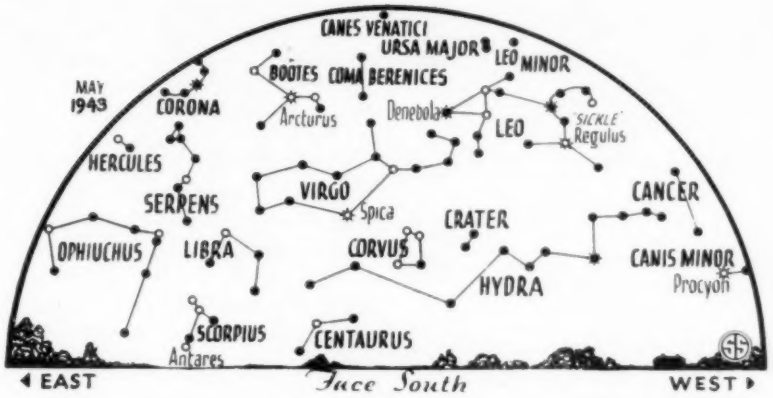
Ideas Not Accepted

But these ideas were not then accepted. Hipparchus, who lived about 126 B.C., preferred an earlier suggestion that the earth was the center, and his ideas were preserved in a great work, generally called the "Almagest," by Claudius Ptolemy, who lived a little later. Thus the Ptolemaic theory, as it came to be called, reigned undisputed until the early 16th century.

Copernicus studied in Italy, but about 1506 he returned to Poland. Interested in astronomy, he began to examine the older writings, and came across references to the ideas of Aristarchus. Despite the general prejudice against a moving earth, Copernicus kept an open mind, and soon saw that this gave a much simpler explanation of the motions of the sky than the complicated Ptolemaic system.

Around 1530 he began to write down his ideas in his great work, "De Revolutionibus Orbium Coelestium" — "On





☼ ✱ ○ • SYMBOLS FOR STARS IN ORDER OF BRIGHTNESS

the Revolutions of the Celestial Orbs." About the same time he wrote a summary, which was circulated in manuscript, the "Commentariolus," and from which Pope Clement VII in Rome seems to have heard about it in 1533.

In the summer of 1539 there came to visit Copernicus a 25-year-old professor of mathematics from the University of Wittenberg. This was Georg Joachim of Rhaetia, better known as Rheticus. In October he wrote an account of the Copernican ideas to his friend Johann Schoner at Nuremberg, and this letter was published at Danzig in 1540 as the "Narratio Prima" ("First Narration"). It was the first published account of the epoch-making ideas of the Polish astronomer.

Full Work Published

Its reception was favorable enough that Rheticus was able to persuade his master to allow publication of the full account. So Rheticus was entrusted with the manuscript, and he took it to Nuremberg with the idea of seeing it through the press. Unfortunately, however, Rheticus left in 1542, to accept a professorship at Leipzig, and Andreas Osiander, a Lutheran clergyman, was left in charge. Apparently, he was uneasy about the radical character of the ideas expressed, so he wrote an anonymous preface stating that this was not necessarily a true picture of the way things were, but merely another hypothesis for the convenience of astronomers.

In the spring of 1543 the book appeared, and a copy was dispatched to Frauenburg. It arrived on May 24, the day that Copernicus passed away. There is no more dramatic scene in the history of science than that of the dying astronomer, handed the first copy of the work over which he had labored so many years and which, as he realized, boldly moved the earth from its place of honor, to become one of a whole family of planets revolving around the sun.

True, this was not the system we today know to be the true one. He still kept the planets moving in circles, and retained many of the smaller circles, or epicycles, which encumbered the Ptolemaic theory in order to explain the changing distances of the planets. But at least it paved the way by taking the main step. Despite opposition to his ideas by the Protestant as well as the Catholic Church, it gradually was accepted. Later astronomers added to it. Kepler showed that the planets moved not in circles, but ellipses. Galileo made observations with his first tiny telescopes which supported it. Newton formulated the laws under which the planets moved.

On this foundation our modern structure of astronomy has been erected. And that is why this month, in a warring world, men are pausing to pay tribute to the man who began it. And in so doing they also honor his native Poland, now crushed to earth under a tyrant's heel. But the culture that brought forth Copernicus cannot be crushed. In the words of the Polish national anthem:

"Poland shall again be free, victory is nearing!"

Celestial Time Table for May

May	EWT	
4	early a.m.	Meteors of eta Aquarid shower seen in southeast.
	5:43 a.m.	New moon.
7	2:24 p.m.	Moon passes Venus.
9	4:32 p.m.	Moon passes Jupiter.
10	1:00 p.m.	Moon farthest; distance, 251,300 miles.
12	5:52 a.m.	Moon in first quarter.
19	5:13 p.m.	Full moon.
22	10:00 a.m.	Moon nearest; distance, 226,600 miles.
26	9:33 a.m.	Moon in last quarter.
28	6:26 a.m.	Moon passes Mars.

Subtract one hour for CWT, two hours for MWT, and three for PWT.

Science News Letter, May 1, 1943

MEDICINE

Jaundice May Occur Months After Transfusions

➤ PHYSICIANS should be on the lookout for jaundice developing one to three months after blood or plasma transfusions, Dr. Paul B. Beeson, of Grady Hospital and Emory University School of Medicine, urges (*Journal, American Medical Association*, April 24).

Dr. Beeson reports seven such cases in which he believes the jaundice was probably caused by some substance in the blood or plasma used for transfusions. The condition is similar to cases of jaundice that have been reported following yellow fever vaccinations and use of convalescent serum in measles and mumps.

More such cases may be occurring without being recognized, Dr. Beeson suggests, because the long period between the transfusion and development of jaundice may mask the significance of the transfusion in causing the condition.

The only way to find whether jaundice is frequently occurring as a result of blood and plasma transfusions, Dr. Beeson states, is for physicians to make a concerted effort to recognize such cases. He suggests the following two practical measures for investigating the problem:

"First, a careful record should be kept of the source of blood or plasma administered to each patient. Second, a small portion of blood or plasma should be set aside at the time a transfusion is given, so that, in the event of subsequent cases of hepatitis, some of the causative material will be available for study."

Science News Letter, May 1, 1943

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METEOROLOGY

Icing Less in Storm

Heavy snow or rain presents less danger of ice forming on airplane wings than does air that is merely damp or drizzly.

➤ ICE on the wings, that worst of fliers' nightmares, is less of a danger during a heavy rain or snow than when the air is merely damp and drizzly, but cold. This conclusion, running counter to widely accepted belief, is one of the results of a special study of icing conditions carried on by meteorologists of Harvard's Blue Hill Observatory, working at the special weather station on top of Mt. Washington, in New Hampshire, where some of the world's worst weather can be observed. Report on these studies was made by Dr. David L. Arenberg, before the meeting of the American Geophysical Union.

A mountaintop was chosen for this research, rather than an actual airplane, because a mountain "stays put" while an airplane cannot hover indefinitely in a patch of weather where icing is taking place—and would have cause to regret it if it could. Moreover, solider and more numerous instruments can be installed on the solidity of the mountaintop than can be imposed on the limited weight-carrying capacity of a plane.

Dr. Arenberg said, in part:

"Of the results that will be eventually applicable elsewhere, the most important is the intimate relation between precipitation and liquid water content or cloud density. Because both are produced in storm areas, it has been assumed heavy icing occurs with heavy precipitation. Actually, heavy snow or rain clears the air and lowers the icing chances.

"Another feature is that icing occurs at extremely low temperatures down to 40 degrees below zero Fahrenheit. The effect of temperature is mainly to lower the available liquid water but the probability of icing is not lessened. At high altitudes, as in a thunderstorm, icing may be exceptionally intense.

"As rain is thought to start in a cloud by the action of a few ice crystals among the supercooled water drops the origin of these ice crystals is being studied, samples of clouds are being micro-photographed and measured with equipment of Prof. H. G. Houghton of the Massachusetts Institute of Technology. Only rarely and at temperatures below zero degrees Fahrenheit are ice crystals found. Different types of air differ in this property of forming crystals.

"Other factors investigated at the Observatory are the variations in drop size, density of ice, amount deposited on various shaped objects, strength of ice, and light transmission in clouds."

Science News Letter, May 1, 1943

Pressures Change With Spots

➤ AN APPARENT correlation between sunspot activity and pressure distributions in the earth's atmosphere was reported before the same meeting by I. I. Schell, also of the Blue Hill Observatory scientific staff.

Mr. Schell selected periods of maximum and minimum sunspot activity over a considerable period of years—periods of three months showing 80 or more spots, and other three-month stretches in which the sunspot numbers sank to five or less. He checked these against contemporary records of atmospheric pressures in high and low terrestrial latitudes.

In general, when there were many spots, pressures tended to be low nearer the equator and high in areas well to the north and south of it. Contrariwise, during periods of scanty sunspots, pressures near the equator went up and those in higher latitudes came down.

Science News Letter, May 1, 1943

NUTRITION

Mead Johnson Award For Work On Biotin

➤ THE $1000 award given each year by Mead Johnson and Company for researches on the B complex vitamins goes this year to Prof. Vincent du Vigneaud and associates of Cornell University Medical School for their work on the structure of biotin, Dr. Arthur H. Smith, of Wayne University and secretary of the American Institute of Nutrition, announces.

The recipient of this award is chosen by a committee of judges of the American Institute of Nutrition, and the award ordinarily is announced at the Institute's annual meeting. The meeting was cancelled this year on account of the war.

Biotin is necessary for the growth of yeast and other microorganisms. It cures rats of the skin disease known as egg-white injury. It may play a role in cancer and is believed necessary to prevent a skin disease that develops in rats when given sulfa drugs. Its role in human nutrition is not yet definitely known, though many scientists are working on this problem.

The chemical structural formula of biotin was announced last year by Prof. du Vigneaud. If, as is usually the case, synthesis of the vitamin follows soon, scientists will have more ample supplies to work with than at present and new knowledge of the vitamin may be gained more rapidly.

Science News Letter, May 1, 1943

MEDICINE

Low Fat Diet and Thyroid Cure Rare Type of Acne

➤ SUCCESS in treating a rare and severe type of acne, known to skin specialists as acne conglobata, is reported by Dr. Richard L. Sutton and Dr. Mark M. Marks, of Kansas City, Mo. (*Journal, American Medical Association,* April 24).

The patient had suffered for ten years with this severe skin trouble on the back of the neck, chest, buttocks, groins and forearms. While seldom completely incapacitated, he was continually in pain, had to wear wet dressings and had to have the sores opened and drained frequently. The wounds always healed slowly and generally opened again after apparently healing.

He finally came to the Kansas City doctors, who put him on a low-fat diet and gave him thyroid extract. Within seven weeks his wounds had all healed and he was completely well. He said that he "did not know it was possible to feel so good!"

The physicians reporting this case state that they expect other skin specialists to be skeptical of their claim to have cured acne conglobata in so short a time until they themselves have tried this method of treatment.

Dr. Sutton and Dr. Marks believe the same results can be obtained in every case if the treatment detailed in their report is followed. The basis for the ailment, they believe, is underactivity of the thyroid gland and a disturbance in the body's utilization of fats in the diet.

Science News Letter, May 1, 1943

ASTRONOMY

Gold in the Sun

Evidence obtained for the first time of presence of gold in the spectrum of the sun brings total of earth elements found on sun up to 66.

➤ EVIDENCE of gold in the golden sun has been obtained for the first time, Dr. Charlotte E. Moore of Princeton University Observatory and Dr. Arthur S. King of Mt. Wilson Astrophysical Laboatory, have announced to the Astronomical Society of the Pacific. Discovery of gold makes a total of 66 elements positively or tentatively identified in the sun out of the 90 found so far upon the earth.

The evidence depends chiefly upon the fact that one of the strongest radiations or spectrum lines emitted by gold in the form of a glowing vapor agrees closely in position with a weak unidentified line in the spectrum of the sun.

It was already known that gold is so scarce in the sun that only the strongest lines observed in the laboratory would be likely to appear as very weak lines in the solar spectrum.

Unfortunately, the strongest gold line of all—its so-called ultimate line—is hidden from view in the solar spectrum by the powerful ozone absorption bands of the earth's upper atmosphere. So little was known about the remaining strong lines of gold that occur in the observable parts of the solar spectrum that it was useless to attempt their identification.

The situation until two years ago was somewhat similar to that of a miner who has a map showing the location of several dozen veins of gold within a huge mountain side, all of which are very thin with one exception. He would like to bore for this single rich vein but he does not know which one it is.

However, when the results of an investigation of the sensitiveness of lines in gold spectrum became available in 1941, the search for gold in the observable region of the sun's spectrum could proceed with more certainty.

It would be highly appropriate if the critical line upon which the identification depends occurred in the yellow-orange part of the spectrum. Actually it is in the ultraviolet, invisible to the eye but readily observable by photography.

One possible source of error remained that might invalidate the entire proceedings. The position of the solar line was obtained from a catalogue of the solar spectrum compiled over half a century ago by the famous physicist, H. A. Rowland of Johns Hopkins University.

Some of the weakest lines listed by Rowland do not appear on modern plates, although the same plates may show other weak lines not observed by him. This is particularly true near the ultraviolet limit of the solar spectrum. In addition, this line of gold is what is known as a "low temperature line" or one that is strong in comparatively low temperature sources of light. Therefore, it should appear stronger in sunspots, where the temperature is about 8000 degrees Fahrenheit, than in the surrounding surface of the sun at a temperature of 11,000 degrees Fahrenheit.

To check on these points, Harold D. Babcock and Mrs. Mary F. Coffeen of the Mt. Wilson Observatory, made an examination of photographs of the sunspot spectrum taken during the course of a previous investigation. Not only did they find a weak solar line at the proper position but it was also seen to be moderately strengthened in the spot as would be expected of a low temperature line.

They concluded that, "This moderate strengthening in the spot together with the satisfactory correspondence in position of the solar and laboratory lines, would seem to justify the statement that gold is now identified in the sun."

Science News Letter, May 1, 1943

PHYSICS

Radium Method Difficult

Measuring large quantities of water by means of minute quantities of dissolved radium is not simple. Many sources of error found.

➤ RADIUM in tiny quantities may be used to measure large masses of water, but the method is not as simple as it seems at first glance, Dr. Victor F. Hess, German Nobel Prizeman in physics now at Fordham University, told the American Geophysical Union at its meeting in Washington, D. C.

Some indirect means is desirable for accurately measuring large quantities of water in reservoirs, where direct weighing is not possible. One method that has been tried has been to dissolve a lot of salt in the water, then collect a sample of it as it comes out of the tailrace of the power plant and determine the salt concentration in that.

Some time ago the noted French physicist, Dr. J. Joly, suggested the use of minute amounts of radium, which diffuse rapidly and evenly in water, but he did not do any experimental work on the method himself. Dr. Hess has done so, making use of a large tank in Pennsylvania, loaned for the purpose by a power company.

Sources of error were found to be more numerous than anticipated. There was a tendency for part of the radium to become tied up in insoluble form with "hardening" chemicals in the river water; this could be partly overcome by adding hydrochloric acid. Minute but variable amounts of radium are naturally present in the water, so that their effect has to be measured in advance and proper allowances made. Even the type of glassware used in the laboratory may falsify results unless great care is exercised.

Dr. Hess concluded by cautioning his hearers not to "attempt blindly to set out to measure large volumes of water with too little radium."

Science News Letter, May 1, 1943

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Earthquake Waves Clocked

➤ EARTHQUAKE waves can travel along the surface of the earth at more than cannonball speeds, a paper by Ralph R. Bodle of the U. S. Coast and Geodetic Survey disclosed. Just before the war broke out, a special seismograph was installed at St. Georges, Bermuda, to catch crustal waves moving over the bottom of the Atlantic and measure their speed. Velocities of such waves, measured not only at this station but at one in Norway, averaged about 4.5 kilometers (2.79 miles) per second.

Science News Letter, May 1, 1943

Mississippi's Flow Data

➤ DURING the century from 1839 to 1938, the Ohio river poured approximately 280,000 cubic feet of water into the Mississippi River every second. In the same period the mean flow of the Mississippi, just below the junction of the Red River, was about 635,000 cubic feet per second. These figures were presented by Dr. Clarence S. Jarvis of the U. S. Soil Conservation Service. The data are taken from government records.

"Fortunately for the science of hydrology, and for all to which it relates, the rainfall, temperature, and other climatological data, including daily river stages and daily forecasts, had become entrenched as essential parts of the U. S. Weather Bureau records," Dr. Jarvis stated.

Science News Letter, May 1, 1943

Recorder for Wind Data

➤ A PHOTOGRAPHIC recorder used to replace previous methods of obtaining a series of wind velocity measurements was described at the meeting by Dr. Leonard B. Corwin of the U. S. Soil Conservation Service.

Dr. Corwin stated that the recorder was developed to secure simultaneous measurements of wind velocity at several different levels where electrical power was unavailable. The dials or faces of several counters were photographed as the simplest and surest way to obtain multiple records. By adjustments, photographic observations could be obtained at intervals of one minute up to an hour or more.

Dr. Corwin stated that the photographic recorder "appears to offer a means of obtaining an autographic record of many if not most meteorologic and climatic values." Further simplification of the apparatus is contemplated.

Science News Letter, May 1, 1943

MEDICINE

Fish Oils May Be Source Of Blood Pressure Remedy

➤ COD LIVER OIL and other fish oils may prove to be a source of a high blood pressure remedy, it appears from a report by Dr. Arthur Grollman and Dr. T. R. Harrison, of the Bowman Gray School of Medicine at Wake Forest College, to the Society for Experimental Biology and Medicine. (*Proceedings*, March)

Fish body and liver oils, they discovered, contain a substance which is effective in reducing high blood pressure in rats. The substance is not the same as vitamin A, which is contained in fish liver oils and which some scientists have believed has a blood-pressure reducing effect. It is, however, similar to the kidney extract hailed a few years ago as a potential remedy for high blood pressure.

Both the kidney extract and the fish oil substance can be given by mouth. Both reduce the blood pressure slowly and have a relatively prolonged effect compared to other substances that reduce high blood pressure.

The blood-pressure reducing substance, however, is present in only small amounts in animal kidneys. Fish oils, on the other hand, are relatively potent in reducing blood pressures and are readily available. Therefore, in the opinion of the investigators, they "offer greater promise than kidneys" as a source of a blood pressure remedy.

Further experiments are in progress to learn the nature of the substance in fish oils which reduces high blood pressure in rats.

Science News Letter, May 1, 1943

Sugar-beet farmers are advised to plant a new variety of *potato* named Pawnee because it matures and can be dug before the beets are ready to harvest.

The U. S. Bureau of Mines has undertaken a greatly expanded search for bauxite, alunite, and aluminous clays to make the country independent of imported bauxite for *aluminum*.

Tight oak or gumwood *barrels* may be used for the transportation of cottonseed and linseed oil, soap, lubricants, and strong alcohol, if coated internally with a solution of sodium silicate.

ANTHROPOLOGY

NATURE RAMBLINGS by Frank Thone

The Merry Month

➤ EASTER, just past, has a few very ancient, pre-Christian practices lurking behind its orthodox ecclesiastical decorations and observances (See *SNL*, April 24). Many persons praise as wise the traditional policy of the Church, of not attempting to suppress all heathen observances by a converted people, but permitting the retention of those that are innocent or unobjectionable. Thus, relics of the old equinoxial, seed-time festivals survive in Easter customs—rather badly dislocated in time this year because of the unusual lateness of Easter.

The new religion writes a thinner palimpsest-script over the old in May Day celebrations. For one thing, there is no important Church feast-day on May 1, so that observance of the day can be much more frankly secular.

May Day is what even its attenuated modern form indicates, primarily a flower-time feast, as the pagan festival supplanted by Easter was a seed-time celebration. It marks the advance of the year, the growing of hopes for a good harvest of fruit from the blossoming boughs, of grain from the soil that has sent forth bright promises in the form of violets and anemones and buttercups.

Nowadays May Day is almost altogether a children's holiday, except where colleges and girls' schools choose and crown their May Queens. However, this enthronement for a day of the prettiest young woman in the community isn't merely a momentary stretching-out of childhood; it is actually a closer approach to the original form of the old festival. For May (as young people don't need to be told) is a time for romance and love-making, and the Queen of May was the village's living image of the

Goddess of Love—one of whose classic names was Maia.

The late Medieval and Renaissance times, when not merely children but young grown-ups danced around the May-pole, all this was better remembered. That accounts for the stricter attitude of the moralists of the times, and the eventual attempts at total suppression undertaken by the Puritan government of England during Cromwell's reign.

It probably also accounts for the lesser observance of May Day in this country, since the cultural atmosphere of at least the northern states was largely established by the descendants of Puritan settlers. Only as their austerity has relaxed with the passing of generations have May-baskets and the May-pole returned.

Science News Letter, May 1, 1943

PUBLIC HEALTH

New Aid to Workers' Ears By Plastic Ear Molds

➤ A NEW aid to protect the hearing of workers in noisy industries, such as shipbuilding, and which promises to be "the solution for certain industrial ear problems" is reported by Dr. David A. McCoy, of Boston (*Journal, American Medical Association,* April 24).

It consists of an ear mold of transparent plastic lucite, made to fit each worker's ear. This custom-made feature provides a good fit with no leaks of noise and one which is comfortable to wear all day.

The ear mold reduces the intense and high-frequency noises, which are distressing, painful and deafening, but lets the wearer hear people talking without trouble.

A further advantage of this plastic ear mold is that it shuts out the flying balls of hot slag which are a danger to the ears of welders and chippers.

The new ear molds were tried for two weeks by 30 welders, chippers, burners, buffers and other workers in the California Shipbuilding Corporation, Dr. McCoy reports. All the workers found them satisfactory and about 500 have now bought them without any advertising by the ear mold company.

Workers who used them report not only that the molds shut out the intense noise but also that as a result of not being distracted by it, they can do more work in a day.

Science News Letter, May 1, 1943

• New Machines and Gadgets •

⚙ *A NEWLY designed high-speed scoop for earth excavation is said to cut cost by half. Mounted on four rubber-tired wheels, it can travel on pavement. The device is considerably lighter in weight than the former cast steel model.*

Science News Letter, May 1, 1943

⚙ *BLACK-OUT PAINT has been developed which can be easily applied to windows with brush or spray. It can be removed readily with a rag dipped in turpentine. Forming an opaque semi-soft flexible film, this non-cracking paint expands with the glass. A special white paint can be put over the black paint to lighten up the interior of the building.*

Science News Letter, May 1, 1943

⚙ *WASTE TRIMMINGS of plastic used in a commercial laboratory are molded as heads on common tacks or small metal studs. These are being used in the laboratory as stick pins to replace hard-to-get metal thumbtacks.*

Science News Letter, May 1, 1943

⚙ *A COLLAPSIBLE BED that can be attached to and folded within an office desk has recently been patented. The telescopic frame can also be used with other types of furniture such as a radio cabinet in an apartment or automobile trailer.*

Science News Letter, May 1, 1943

⚙ *THE NEW AIRPORT runway light, which an engineer is viewing through a filter glass in the picture, is strong enough to withstand the impact of giant planes. The guiding light continues to burn under a 50-ton load, nearly three times the strength of former lights. Designed in about the size and shape of a fire hydrant, the unit is buried underground except for the top three inches.*

Science News Letter, May 1, 1943

⚙ *ALUMINUM WELDERS using hydrogen torches are now protected by new goggles which filter out all glare, relieving eyestrain and permitting a better view of the work.*

Science News Letter, May 1, 1943

⚙ *BOX-CAR oil carriers are a future possibility. A model now under test is a standard automobile-type steel box-car into which has been fitted four steel tanks encased in wooden boxes. The car has a capacity of 12,200 gallons, considerably more than the ordinary tank car.*

Science News Letter, May 1, 1943

⚙ *WINDOWS made of the metal beryllium are used in a new X-ray outfit for testing materials for bombing planes and other war machines. Beryllium is opaque to ordinary light but it is more transparent to certain kinds of X-rays than glass. A very thin disk of pure beryllium is sealed in the wall of a vacuum X-ray tube by a special process.*

Science News Letter, May 1, 1943

If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, *1719 N St., N. W., Washington, D. C., and ask for Gadget Bulletin 154.*

Spots on clothing are removed more effectively by several short applications of cleaning fluids than by single long treatments.

There are more than 20,000 *seeds* in an ounce of lettuce, carrot or tomato seed, it is reported.

OUT OF PRINT
U. S. Publications at low prices:
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First Glances at New Books

➤ MALARIA is demanding the attention of many scientific workers hitherto not closely acquainted with the problems of this disease. Two recent publications of the National Institute of Health, U. S. Public Health Service, on the subject should therefore find wide usefulness. They are: Bulletin No. 179, THE ANOPHELINE MOSQUITOES OF THE CARIBBEAN REGION, written with a view to the needs of the field man in malaria control, by W. H. W. Komp; and Bulletin No. 180, MANUAL FOR THE MICROSCOPIC DIAGNOSIS OF MALARIA IN MAN, by Aimee Wilcox. (*Govt. Print. Off.*, at 35 and 30 cents respectively.)

Science News Letter, May 1, 1943

➤ SO MUCH about the sulfa drugs is of a miraculous nature that the lay reader is likely to believe their creation had the swift suddenness of a miracle. The story of what actually happened, of the long, tedious search for chemicals to stop disease germ invasion of the human body is well told by Dr. Iago Galdston in his new book, BEHIND THE SULFA DRUGS (*Appleton-Century*, $2).

Science News Letter, May 1, 1943

➤ "THE REALM of viruses and virus diseases reminds one of a boom town; nothing is settled," writes Dr. Thomas M. Rivers in the foreword to VIRUS DISEASES (*Cornell University Press*, $2), a book made up of the six Messenger Lectures given by himself and five other members of the staff of the Rockefeller Institute who are working in the virus field. Although the subject matter is complex and difficult to understand, the diligent lay reader as well as the scientist will find much of interest in the book.

Science News Letter, May 1, 1943

➤ GOOD BACKGROUND reading on rubber is presented in TREES AND TEST TUBES by Charles Morrow Wilson (*Henry Holt*, $3.50) from first hand information gained in the American tropics. Besides recounting the saga of rubber, the author takes up the why and wherefore of the current rubber crisis.

Science News Letter, May 1, 1943

➤ THE NEW technology of small particles has been called MICROMERITICS by J. M. Dalla Valle. His comprehensive book by the same name (*Pitman Pub. Corp.*, $8.50) should be on the reference shelf of every scientist whose work touches this field. It correlates a vast amount of technical material on the behavior and characteristics of fine non-colloidal particles complete with an excellent bibliography and index.

Science News Letter, May 1, 1943

➤ AIRPLANE NAVIGATION is clearly and completely explained in AIR NAVIGATION, by Herbert S. Zim (*Harcourt, Brace and Co.*, $3). This new science of prime importance to present-day warfare is also of interest to laymen who contemplate post-war airplanes of their own. The book is well illustrated with charts and includes a glossary of air navigation terms and a bibliography.

Science News Letter, May 1, 1943

➤ SIMPLE and on the whole sound advice for new mothers is given by Louise Cripps Glemser in YOUR FIRST BABY (*A. S. Barnes and Co.*, $1).

Science News Letter, May 1, 1943

➤ SIMPLE DIRECTIONS on how to use tools about the home and to keep the home buildings in repair are found in THE HOME MECHANIC, by Douglas Tuomey (*Macmillan*, $2.50). The would-be mechanic is assisted by clear illustrations.

Science News Letter, May 1, 1943

➤ EGYPT AND THE SUEZ CANAL is another excellent war background study of the Smithsonian Institution prepared by Frank H. H. Roberts, Jr. It covers the present Egypt and its people, and reviews ancient Egypt. The story of the first waterway connecting the Mediterranean and the Red Sea is retold. It contains interesting illustrations from mummies to mosques. (Free upon direct application to the *Smithsonian*).

Science News Letter, May 1, 1943

➤ CLEARLY and cheerfully written, HEART DISEASE IS CURABLE, by Peter J. Steincrohn (*Doubleday Doran*, $1.98), gives much sound and helpful information.

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• Just Off the Press •

BLOOD GROUPS AND TRANSFUSION—Alexander S. Wiener—*Thomas*, 438 p., illus., $7.50. Third ed.

COASTAL COMMAND: The Air Ministry Account of the Part Played by Coastal Command in the Battle of the Seas, 1939-1942—*Macmillan*, 143 p., illus., $1.50.

CRYPTOGRAPHY: The Science of Secret Writing—Laurence Dwight Smith — *Norton*, 164 p., $2.50. By an expert who was in the Military Intelligence Department of the Army during the last war.

DARKNESS AND THE DEEP—Vardis Fisher—*Vanguard Press*, 296 p., $2.50. A fictional account of a pre-historic family.

FAMOUS AUTHORS FOR BOYS AND GIRLS—Ramon Peyton Coffman and Nathan G. Goodman—*A. S. Barnes*, 167 p., illus., $2.

FUN WITH CARDS — Dale Adams — *A. S. Barnes*, 18 p., $1. Contains popular card games played today for different numbers of players.

HOW TO PREPARE FOR MILITARY FITNESS —Francois D'Eliscu—*Norton*, 216 p., illus., $1.96.

THE MAMMALS OF COLORADO: Their Habits and Distribution—Edward Royal Warren—*Univ. of Oklahoma Press*, 320 p., illus., $4.

MANUAL OF INDUSTRIAL HYGIENE AND MEDICAL SERVICE IN WAR INDUSTRIES —Edited by William M. Gafafer—*Saunders*, 508 p., $3.

METHODS FOR DIAGNOSTIC BACTERIOLOGY: A Complete Guide for the Isolation and Identification of Pathogenic Bacteria for Medical Bacteriology Laboratories — Isabelle G. Schaub and M. Kathleen Foley —*Mosby*, 430 p., $3.50. 2d ed.

MICROMERITICS: The Technology of Fine Particles—J. M. Dalla Valle—*Pitman*, 428 p., $8.50.

THE NEUROMUSCULAR MATURATION OF THE HUMAN INFANT — Myrtle B. McGraw—*Columbia Univ. Press*, 140 p., illus., $2.

PLANTS WE EAT AND WEAR—H. E. Jaques —*pub. by author*, 171 p., $1.50; cloth binding, $2.50.

THE THEORY AND PRACTICE OF HEAT ENGINES: Including Steam Generators, Reciprocating Steam Engines, Steam Turbines and Internal Combustion Engines—R. H. Grundy—*Longmans, Green,* 723 p., illus., $6.25. "A textbook for engineers and beginners."

QUESTIONS AND ANSWERS FOR MARINE ENGINEERS — H. C. Dinger — *Simmons-Boardman*, 130 p., $1. Book VII: Diesel Engines—Electrical Equipment.

TEXTBOOK OF ANATOMY AND PHYSIOLOGY FOR NURSES—Carl C. Francis, G. Clinton Knowlton, and W. W. Tuttle—*Mosby*, 586 p., illus., $3.50.

TREES AND TEST TUBES: The Story of Rubber—Charles Morrow Wilson—*Holt*, 352 p., illus., $3.50.

YOUR FIRST BABY—Louise Cripps Glemser —*A. S. Barnes*, 90 p., illus., $1. Includes a personalized baby record book.

Science News Letter, May 1, 1943

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